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Dear Sir / Madam

Energy Future System Operator Consultation

SGN manage the network that distributes natural and green gas to homes and businesses across Scotland and the South of England. We deliver a safe, secure and reliable gas supply to 5.9 million customers through 74,000km of pipeline.

As reflected in Ofgem's Forward Work Programme, the actions taken now will be critical to future energy systems. SGN is already implementing ambitious low carbon projects and targets, to create a meaningful glide path towards a net zero energy system, which capitalises on the high quality and reliable gas infrastructure already in place and delivers customers the best value future energy solutions.

We support the conclusion highlighted in this System Operator review that the "transition to net zero will fundamentally reform the physical and digital structure of the whole energy system and will require a much more integrated energy system"¹, as such we welcome the opportunity to engage² with the consideration and design of the potential future operating model.

We support the development of a future enhanced Future System Operator (FSO) which would have the national oversight to facilitate the increasing cross-utility interactions and inform changes in demand requirements, for example managing the relationships between gas and electricity networks in relation to gas-fired electricity generation plants. We are also of the belief the role of the FSO, should include the responsibilities as detailed in Option 2.

We appreciate that Option 2 is not the recommended option set out in the consultation, however, it is our view these responsibilities are important to facilitating the move to net zero in the most cost effective manner by incorporating the knowledge of the gas networks and their physical characteristics within the FSO. As such, whilst we recognise there are challenges associated with such an extensive transition, we believe a single broad reform process is preferable to a partial reform process and the risk of requiring further change in the future.

It is our view energy consumers will benefit if all aspects of the current energy system are equally represented from the outset. Future energy system planning must take into consideration the benefits, innovations and

¹ P27, Review document

² SGN is participating in BEIS/GDN bilaterals and UNC 0705R discussions

decarbonisation pathways currently on offer and being pursued within gas over the next few years and these must be considered alongside, and given equal scrutiny and weight to, electricity decarbonisation pathways. By taking on the lesser role (option 1) there is a risk to consumers the FSO will be focused on operational considerations for the electricity market and less aware of cost impacts or opportunities within the gas market. Whilst this can be addressed through alternative structures, if it is not addressed, it is likely to lead to a worse customer outcome.

It is in the consumers interest that gas transmission and distribution systems are appropriately represented within the FSO as we move towards a decarbonised gas network and the potential benefits are realised.

The role and duties of the FSO should take these needs into account:

- Need to ensure all energy vectors are equally understood in terms of their pathway to net zero. Currently, we find the role of gas and the characteristics of how the gas networks operate, are a secondary consideration. The gas networks deliver nearly 65% of the energy consumed in the domestic household³ and 40% of primary energy consumed in the UK⁴. The gas networks, the way they operate and the opportunities they create need to be considered at the outset if decarbonisation of heat is going to be achieved at a lowest cost.
- Integration between electricity and gas networks, and avoiding separation, is particularly important given the different physical characteristics and the associated safety implications of the different networks. If these are not fully understood and given equal weighting, then it could lead to poor decision making, costing the consumer more than would otherwise be necessary.
- As a result of this, the role of the GSO should be considered more fully within the functioning of the FSO, along the lines set out in option 2, and we would encourage the FSO to take a more integrated and whole systems approach.
- To deliver this integrated approach it becomes very important to have clear lines of responsibility and accountability for delivering capacity and maintaining safety. Decision making should be aligned with those lines of responsibility and accountability. It is our view the scale of this challenges should be recognised from the outset and sufficient time should be set aside to address them. This should cumulate in clear risk assessment and a clear understanding of who, under different negative events, would be liable, and what their associated exposure would be.
- Equally within an emergency situation it is very important the right actors have the right communication channels between organisations to manage risk in the most appropriate way and in the timeliest manner. We need to be particularly careful not to create unnecessary chains of communication.
- An important consideration will be the boundary between the local and the national operation of networks. With a zonal or localised decarbonisation pathway, local planning and operation of networks and working directly with local stakeholders and authorities becomes more important relative to a more centralised decarbonised pathway. Under-all decarbonisation pathways, bringing local communities on the journey and ensuring they have appropriate representation as to how pathways are implemented is critical.
- Finally, it is important to recognise the creation of the FSO will incur additional costs, as we believe there will be an unavoidable replication of work across different organisations. This is to a large extent inevitable given there are licence or statutory obligations placed on network companies which compliment, overlap with and interact with obligations and expectations placed on the FSO. This additional operating cost should be acknowledged and considered alongside benefits of better informed decisions on decarbonisation and the associated benefits.

³ Energy Consumption in the UK, BEIS, Oct 2020, not including transport

⁴ Digest of UK energy Statistics, BEIS, July 2021

It is important the timescales associated with the review and implementation of any new arrangements, are aligned with the pace of change required to deliver the net zero transition.

We have provided our further comments below in response to the questions asked in the consultation document.

Yours Sincerely,

David Handley
Head of Regulation, SGN

1. Do you agree that net zero will create the need for new technical roles in the electricity and gas systems, and require a new approach to energy system governance?

We agree that net zero will create a need for new technical roles in the energy systems and a new approach to energy system governance. The consultation document refers to a number of areas that are responded to in more detail in subsequent questions. Additional examples of areas we think the FSO will need to engage with include:

- **Flexibility and capacity.** It is widely recognised gas networks provide the flexibility necessary to maintain security of supply on the electricity networks, through the provision of flexible generation capacity able to respond to changes in renewable output. Whilst the extent of reliance may change with technological developments the two need to be considered alongside each other.
- **Consistent price signals.** Given the need for flexibility across both networks, we need to ensure price signals and security is aligned where possible, or at least not to counteract each other. For example, a price signal to provide flexible capacity on the electricity market can be supported if there is an equivalent level of flexibility in terms of booking capacity through gas networks
- **Co-ordination of decarbonisation.** Irrespective of the eventual pathway for decarbonising heat (whether electrification, hydrogen, regional or national solutions) there will be an important role of co-ordination and implementation which will need to filter between the national and the local levels. The challenge of managing this change and an awareness of the commercial impacts on network customers should not be underestimated.
- **Storage and capacity.** There is a concern the daily storage capacity, provided by the gas networks, has been undervalued and unrecognised. Currently gas distribution networks increase the pressure of their networks overnight to store energy, this can then be released during the day to provide a constant, as possible, demand profile to the transmission system. Flexible generators increasingly draw on this storage capacity to maintain the stability of the electricity network in a manner that is hard to forecast, this needs to be incorporated along with more forecastable consumer and industrial loads. As renewable generation increases, the role of the gas networks in providing storage capacity potentially changes, it is important to consider the optimal solution for energy storage (whether gas, electricity or other forms) from a whole system perspective, rather than an energy vector specific perspective.

2. Do you agree that the establishment of a Future System Operator is needed to fulfil the kinds of technical roles needed to drive net zero?

In principle we agree the establishment of a FSO will improve the ability to drive net zero. We think it could be delivered under existing arrangements, but believe an independent organisation will support the delivery.

However, we do not consider the creation of the FSO as a 'switching off and transfer' of capability within current networks. Rather, the roles and capability will need to coexist, with the growth in capability necessary to tackle the challenges of decarbonisation taking place as a result; the creation of the FSO will support this growth in capability.

This is important, as we foresee a significant risk associated with fundamentally changing organisational structures and the risk this creates for losing technical expertise, which is already in short supply. This is important within the gas sector, particularly as we define the decarbonisation pathway and the role hydrogen will play; any disruption could be particularly challenging and costly.

The other challenge which needs to be recognised is that on a day-to-day operational level, we need to ensure the FSO does not take on overly 'centralised' perspective of the network and this does not compromise the local requirements of decarbonisation and delivering energy safely and reliably to customers. With the introduction of the FSO those channels of communication will change and potentially become more complex, particular attention will be needed when it comes to an outage or resolution of an emergency incident.

3. Do you agree that a Future System Operator should have roles in both the electricity and gas systems?

Yes, we agree the FSO should have roles in both electricity and gas systems, but they need to be equal roles. Domestic customers currently consume three times the volume of energy from natural gas as they do from electricity, it is essential this is appropriately represented from the outset in the formation of the FSO and reflected within its representation and working groups.

There is a tendency for the role, and the importance of the gas system, to be underplayed and underrecognised given the volume of energy it transports compared to electricity. Therefore, this needs to be embedded into initial thinking and subsequent decision making across all energy networks, this is particularly important as we build toward net zero. This needs to be reflected within respective licences to guard against an inappropriate level of focus on a single energy vector or decarbonisation pathway.

In defining these roles, a focus needs to be applied to the difference between local and national accountability. Currently there is a distinction between the national level and the local level in terms of supporting appropriate levels of capacity and delivering appropriate volumes of energy. This currently appears to be a fitting distinction, although clearly there are opportunities for improvement.

4. Do you agree that a Future System Operator should be entirely separate from National Grid plc?

We broadly agree it is better for entire separation. This becomes more important if the FSO is to have a level of strategic oversight for codes where, given the importance of commercial considerations in some of the more challenging codes reforms, we would also consider this to support the case for complete separation between the two.

5. What issues are there with existing institutional arrangements in the UK energy system in relation to system-wide decision-making and planning?

It is very important given the implications of decarbonisation for our customers, particularly in terms of cost, quality of service, and level of disruption experience, the strategic decision making at the macro level must remain with publicly accountable bodies which are ultimately accountable to the electorate.

We recognise the important role organisations that are not publicly accountable have, in terms of informing the debate and providing information to those public bodies in a transparent, proportionate and well evidenced manner.

We also recognise some organisations, particularly those with a duty to be impartial, may be better placed to make recommendations to publicly accountable bodies and have those recommendations considered more fully than recommendations made by organisations that do not have requirement of impartiality.

This is particularly important given the decision regarding the decarbonisation pathway will have significant direct cost impacts. However, more importantly will be the indirect cost impacts of disruption to peoples homes and everyday lives should decarbonisation of heat be delivered through electrification of existing heating systems or phased removal of an energy source. Given the social ramifications of these impacts we believe it is important to have clear public accountability.

In the consultation document three broad categories are considered – advisory and co-ordinating functions, decision making and policy setting, delivery – it is our view the FSO should focus on the advisory and co-ordination functions and should be very clearly separated from the decision making and policy setting function.

The role regarding delivery is unclear, if it is the delivery of a policy set by policy makers (i.e. appropriate price signals or implementation of a specific strategy) then we agree this is appropriate for the FSO. We would not envisage this extending into physical delivery at any point.

6. What examples/case studies are you aware of where net zero delivery in one part of the energy system did not adequately account for cross-system impacts or costs?

It is important we distinguish between those occurring today and the ones that may arise in the future.

Today, the clearest example is the provision of flexible generation and the location of the provision. Currently market signals in the electricity and capacity market have incentivised the provision of flexible gas generation, which is often located regionally on the gas distribution networks. However, the flexibility required to respond to the needs of the electricity market is not facilitated by the manner in which daily capacity is forecast and required to be notified to the upstream party in the gas networks. Accordingly, there is a conflict between the short-term rapid-response requirements of the electricity networks and the long-term capacity booking requirements and seasonal forecasts requirements which currently define the operation of gas networks.

This interdependency needs to be carefully considered, particularly should they occur at a time of peak demand for gas, such as the next 'Beast from the East' weather event, when gas networks would prioritise known domestic heating demand over the provision of 'un-notified' demand to flexible generators.

Similar examples of appropriate price signals also need to be provided to the provision of decarbonised energy. Previously the use of biomethane to generate electricity has attracted a premium compared to using it in the gas networks to provide renewable heat, despite the inefficiency involved in electricity conversion compared to direct consumption in heat. This is a relatively small example of the possible inconsistencies that can arise in price signals. As we progress towards net zero, the potential for investment decisions to be distorted by poorly aligned price signals needs to be maintained under constant review and scrutiny.

As we look forward, we consider there to be significant risk of poorly aligned decisions regarding the conversion of heating to either electricity, hydrogen or biomethane. These decisions need to be considered alongside the operational costs of maintaining the networks and maintaining the safety for our customers. Maintaining the quality of service and security necessary to protect customers who don't have the opportunity or financial means to convert is going to be a very important political and economic consideration.

7. Where should government focus in our efforts to improve systems thinking and coordination across the energy system?

There needs to be greater clarity in whole systems thinking across policy areas and the relative economic benefits of action in one sector compared to another. This needs to take into consideration the full system costs of different pathways rather than comparing the cost of individual technology.

Such analysis should include the cost of producing a unit of decarbonised energy along with any associated carbon storage costs, the cost of transporting the decarbonised energy including any network upgrades required, the cost of providing system through storage and ancillary markets provision, the cost of converting appliances and manufacturing equipment and how these costs may change over time as deployment and learning improves.

This analysis is important, as it provides a framework to check whether we are asking the right questions and whether we risk deciding or closing a potential decarbonisation pathway too early.

8. Do you agree that the FSO should undertake all the existing roles and functions of NGESO? If not, please explain why.

This is not an area where we are in a position to comment.

9. Do you agree there is a case for the FSO to undertake the long-term strategic functions outlined in Option 1? Please elaborate and provide any views on the functions we have outlined in Option 1.

We agree there is a case for the FSO to undertake the long-term strategic functions as outlined in Option 1, each of the roles is discussed in more detail below.

Long term planning

We agree this should be carried out by the FSO but note this should be recognised as being complimentary to the long-term network planning already carried out by gas networks. As such it is very important to have appropriate delineation and accountability between strategic and operational aspects.

The reason for emphasising this point is the security of supply obligation, the requirement to maintain sufficient capacity for a 1-in-20 peak demand day, is expected to remain with the network. The network planning will be led by what is actually happening (i.e. pull from the market in terms of new developments), rather than a policy intention and as such there may be a lag between the investment decision of a network operator with the legal obligation and the forecasts of the system operator with a more strategic focus on policy delivery. This is particularly the case if the anticipation is for a reduction in capacity requirements where networks will need to be guided by on the ground experience.

As such we agree the FSO should take on the long-term strategic functions, forecasting and planning statements however the presence of the FSO does not detract from the need of networks to carry out their own planning functions, and the boundaries between the two need to be carefully established.

Strategic network planning

Where it is the strategic network planning, then we need to consider the time intervals and the levels of planning being considered. The more operational strategic planning becomes, the more important it is to appropriately align responsibility for maintaining security of supply.

Currently network investment decisions are typically taken with a 2-3 year time horizon extending to 4–5 years for larger projects. As such, we need to be clear about what time frame strategic network planning should be considering as impacting from, and recognising the time lag between decisions being taken and the change delivered in a physical asset.

This would help to separate the debate about delivering net zero and the appropriate level of caution required to ensure security of supply and safety standards are maintained in the near term and physical changes in the network at a local level are appropriately reflected. At all stages however, we need to ensure there is robust and effective communication between local and national operations and between electricity and gas operations.

Market strategy functions

Given the importance of accurate pricing in a manner consistent across, and aligns to, the needs of gas and electricity customers, we consider this an important function of the FSO.

Other functions - Network Emergency Co-ordinator

There is a role for the FSO in this instance to appoint the NEC in a Network Gas Supply Emergency (NGSE), which would require a change in demand on the electricity network and potentially require a reprioritisation of electricity loads to maintain customer safety and heating facilities. In the event of a NGSE being declared, the NEC must operate independently from their employer, as they will be required to report to Government. Therefore, it is not important who they work for in their day to day role, although they must have sufficient knowledge and experience to make informed decisions. It is essential any changes do not jeopardise gas networks ability to be able to maintain contact with NTS System Operator.

10. Do you agree that there is not currently a case for the FSO to undertake all GSO roles and functions, including real-time gas system operation, as outlined in Option 2? If you do not agree, please explain why.

We disagree with the statement ‘that there is not currently a case for the FSO to undertake all GSO roles and functions...’. We think the three roles identified (Real time Gas operation, operating and balancing the system, and operational market functions) complement each other and should all sit with the FSO. The moving of all GSO roles and functions to the FSO could be of benefit to GB consumers, by providing a co-ordination and whole systems approach to delivering net zero from the outset and to reduce the risk of a system operator making decisions based on their area of expertise without being sufficiently cognisant of the impact on other networks. This will reduce the risk of poor decision making based on an incomplete understanding.

We recognise there are significant complexities and challenges in progressing with such an extensive change, and this introduces risks that need to be mitigated and new lines of communication that will need to be thoroughly tested.

It is our view there is a window in which we can make these changes now and ensure they are tried and tested prior to the complex challenges of decarbonising heat being implemented. We also believe there is a window in which to have the debate on how to resolve the challenges and mitigate the risk prior to any legislative window becoming available.

Transferring these roles today, rather than potentially in the future, is supported by the speed of change currently happening in the gas industry and the expected changes due either to the introduction of low carbon gas

(hydrogen) or the potential decommissioning of sections of the network. These will have a fundamentally impact on gas system operation. It is right the FSO should be fully taking them into consideration and gas networks customers should be fully represented from the outset to mitigate the risk to consumers associated with poorer quality decision making, and the need to introduce further changes later and after critical decisions have been taken.

We discuss each of the roles and our reasoning in more detail below.

Real time gas operation

Given the discussion above about the interactions between the gas and the electricity market, the need to have clarity of price signals for access to storable commodities and the provision of flexibility, we think it is necessary to move real time gas transmission operation into the responsibilities of the FSO, recognising that all networks have an important role to play in promoting well evidenced and high quality market change.

This is likely to become even more desirable should the role of gas networks in providing flexibility and storage to the electricity market become greater. As this becomes more dominant, a closer operational alignment becomes more beneficial.

Operating and balancing the system.

We do not think this can be reasonably separated from real time gas operation, and as above, will become necessary and more desirable to move this from NGT to the FSO to support closer alignment of electricity and gas requirements.

Emergency response procedures.

As set out above, we believe national level co-ordination of emergency response procedures should be maintained by the FSO. However, during emergency situations, mitigations will need to be in place to ensure there is no lag in communication between network and local co-ordination, avoiding detriment to customers.

Customer connections processes.

Understanding the connection pipeline is an important point of focus for long-term strategic planning, and it is important new connections are in line with our understanding of net zero decarbonisation pathways. We are conscious there are multiple pathways, and currently there is a lot of uncertainty regarding which pathway is most likely. The route selected will have significant implications for commercial developers in their choice of equipment that may either be a part of the solution or may be stranded according to the decarbonisation pathway eventually settled on. It is important these commercial developers have a full understanding of the risk associated with their connection. Clearly there will need to be close co-ordination between the FSO and the network in terms of the actual physical connection process and the associated timing.

Operational market functions.

As with real time gas system operations, we believe balancing of the system and the operational market functions will need to be transferred to the FSO to support the decarbonisation pathway. As identified in the consultation document, these roles and responsibilities align more closely with the FSO as we move towards green hydrogen provision, and the gas networks providing a wider role in energy storage capability.

11. Do you have views on the proposal for an advisory role? What organisations do you consider would benefit from the provision of advice by the FSO? Who should bear the costs of providing that advice?

We are supportive of the FSO taking on an advisory role to government (Westminster, Scottish and Welsh) and associated government bodies (such as Ofgem and the Climate Change Commission), but this advisory role must be undertaken under a duty of independence, transparency and impartiality and within defined constraints of operational practice.

For example, we believe the Future Energy Scenarios should be maintained and delivered independently of government. It may be appropriate to then provide more detail, or alternative scenarios that are internally consistent and highlight implications of alternative choices.

We are concerned the advisory role could be interpreted very widely and have the potential to become a substantial draw on resource or be expected to provide advice when this is better suited to an appropriate third-party consultancy services. To avoid this we would encourage the FSO to operate with complete transparency

regarding both the models and the information generated so third-party consultancy services are able to utilise, build on and develop strategic advice based on a common and consistent set of scenarios and forecasts.

We would be concerned if the role of the FSO then crossed over to policy or strategic recommendations, this should be maintained by the competitive consultancy market and government advisors. Accordingly, we do not think advisory services should become a revenue stream for the FSO, as such the cost of providing advice should be a part of the regulatory settlement package that covers its ongoing service provision.

12. Do you have any views on the other areas where we are considering new and enhanced roles and functions for the FSO (outlined in section 3.2)?

We have discussed each of the areas identified as potential for new or enhanced roles below.

- **Dispute Resolution.** Instinctively, we are of the view the FSO cannot have a role in dispute resolution. The reason for this is the FSO is likely to be close to the actual events taking place and the points of dispute and this will risk undermining the perception of the FSO as an independent arbitrator.

If the FSO can be identified as being independent of the outcome of the dispute (in terms of its own liabilities or costs incurred to deliver a service) and seen more as a publicly accountable body rather than a private body then there is probably more scope for dispute resolution within its remit.

If the FSO were to take on dispute resolutions, then relevant procedures will need to be put in place for escalation and appeal.

- **System Planning and Network Development.** With longer-term strategic planning and whole system approaches, then we agree there is an important role for the FSO. We also envisage an appropriate role for the FSO in assisting with the evaluation of investment decisions as a part of future price control process, particularly where those decisions are linked to that strategic planning aspect. However, any decision needs to remain with Ofgem and they need the technical competence to assist with the evaluation.

It is very important to be clear on where the boundaries of responsibility sit according to the level of activity being considered. Under the Gas Act, network companies have an obligation to maintain and operate the network in an efficient and economical manner, to connect a premises to their networks as long as it is economical to do so and to operate without undue preference or discrimination. Gas networks also have to maintain a safety case to ensure gas can be conveyed safely to our network customers. Whilst these obligations remain with the network then responsibility for near-term system planning and network development decision making should remain with the network responsible.

- **Driving competition in energy networks.** We do not think this should be separated from Ofgem. Defining a competitive environment for delivery of assets will require an allocation of risk between the delivery party and the consumer. Responsibility for determining how risk should be allocated can only be determined by a body with authority to determine the efficient allocation of cost and risk and therefore in our view must remain with Ofgem.

The FSO may be able to assist with the defining of the operational characteristics or scope of the project, such that the basis on which a competitive event takes place is clearer. However, it is important to note we would not anticipate the FSO to have any expertise in major project delivery and construction contracts, as we would not envisage them to be in a strong position to determine whether a risk allocation is appropriate or in consumer interests.

- **Energy market design.** Energy market design is clearly within the remit and the expertise of the FSO. This covers the quality of the price signal provided to deliver the outcome necessary for the efficient functioning of the market and reducing the conflicts where price signals in one market may counter act the price signals in another. However, this remit must be bounded by an overall cost to the consumer and the point at which the FSO makes decisions that have a material impact on the cost to consumers. As this becomes more substantial, and the capacity market may be an example of where the costs to the consumer is sufficiently material, decision making should be retained by the Secretary of State.
- **Coordination with distribution networks.** We agree with the role of the FSO in supporting the coordination with gas distribution and electricity distribution networks. Currently there are high levels of co-ordination between control rooms and it is important the FSO does not provide a barrier to the day-to-day functionality. There is probably greater scope for co-ordination at a strategic level, and this will become particularly important as a decarbonisation pathway becomes clearer at a national level.

However, if the decarbonisation pathway remains highly localised then the presence of the FSO may become more of a hindrance.

- **Heat and transport decarbonisation.** Given the interdependencies between gas and electricity networks when it comes to heat provision and the increasing interdependencies with transport, it would be an omission if some element of heat and transport decarbonisation was not included within the FSO's remit. However, we do need to consider where the appropriate boundaries are when it comes to local energy mapping and the appropriateness of a national body determining local energy plans. Whilst the FSO clearly needs to be aware of and informed regarding local energy mapping, it is important these plans remain local.
- **Data.** As with heat and transport decarbonisation we agree the FSO could play a role in data and digitisation, specifically with supporting the definition of needs cases for where data adds value and data standards. It is our view the role of the FSO, in relation to data, should not be defined too rigidly at this stage, which seems to be aligned with the position of the consultation document.
- **Future System Operability, engineering standards and energy code development.** Whilst we agree the FSO is in a strong position to provide advice on how codes and standards could affect future system operability, we are less convinced on how central they should be to this process and would want to see a level of independence between the FSO and the code management functionality. The FSO should be a strong voice in defining the need for code changes and should be expected to promote and support, but they are one of many voices; their views and perspective is not a complete picture. We firmly believe the responsibility for code management should remain separated from market actors, as there will be occasions when they will need to manage perspectives which contradict each other.

On a similar reasoning, we do not think the FSO should be taking on additional functions in engineering standards, the BSI or IGEM. Again, whilst their perspective will be important, we think it may be one of many possibly competing perspectives that will need to be independently considered.

- **Hydrogen.** As set out in the consultation document, we think there could be an important role for the FSO to support the growth and diversification of hydrogen networks over the 2020s and anticipated interactions with the electricity network. The precise role may however be dependent on the extent to which hydrogen is deployed nationally and used within the national and transmission network, or the extent to which it is built up locally using sources of energy with limited interaction to the transmission network. There will be a role for the FSO in both scenarios, however the nature of that role is likely to vary accordingly.
- **CCUS.** As with hydrogen we anticipate there is likely to be an important role for the FSO in the delivery of CCUS transportation and storage (CCUS T&S), the precise nature of this role is hard to define with confidence now, and is likely to depend on how the CCUS T&S market develops over time.

13. What are your views on our proposed characteristics and attributes of a future system operator and how the models presented would deliver against them? Are there other characteristics or attributes that we have not yet considered?

Whilst we have no disagreement with any of these high-level characteristics and agree with the distinction made between technically expert and operationally excellent in order to differentiate between expertise and process excellence, we have commented against each below:

- **Technically Expert.** It is very important technical expertise extends across all aspects of the energy system it is involved with. Historically we have worked in a siloed basis with a clear separation between electricity and gas networks, this separation should be removed to support better decision making. The challenges in overcoming this division however should not be underestimated and will require ongoing management focus.
- **Operationally excellent.** Under this section the FSO has an important role in building capacity. It is very clear network planning capability is a limited skill set which requires extensive training and the gradual building of experience over time. As such the pool of appropriately trained resources are limited and it is our view the FSO will need to build resource over time rather than simply increasing competition for an already scarce skill set. The role of the FSO in this aspect currently appears to be overlooked.
- **Accountable to consumers and able to support the delivery of net zero on behalf of the public.** Whilst we agree, it is important consumer accountability for decision making which has far reaching consequences, such as the delivery of net zero, remains with the elected bodies. In this context consumer

accountability should demonstrate policy decisions taken by those elected bodies are delivered as efficiently and effectively as possible.

It is for these reasons we are cautious about incentivising the delivery of high performance in the context of an FSO and whether high performance can be defined with sufficient clarity that it does not impede longer-term objectives of delivering net zero. For example, we anticipate there will be a number of instances where there is a trade-off between short-term savings in system operating costs and long-term costs. In this instance an incentive around minimising system costs may lead to a sub-optimal outcome.

- **Independently minded.** We agree independence from industry is important and this should be reflected in limitations in ownership. Similarly, a level of independence from government is necessary, although it should be recognised the FSO is in place to support the delivery of government policy and as such should not be completely divorced from government.
- **Resilient.** It is important to note this is the resilience of the FSO itself and the resilience of the gas and electricity network the system operator has oversight of. The two can't be divorced, however each of the points identified within the consultation paper will need to be considered from both angles.

We broadly agree with the resulting attributes that are then identified in the consultation document.

14. Are we considering the right organisation models for the FSO? And why?

Of the two options presented, our immediate preference would be for a highly independent corporate body model classified within the public sector which is operationally independent from government. This would be in preference to a standalone privately owned model.

A highly independent corporate model would improve transparency and its close alignment with government would improve accountability. This is important given the close relationship between the objectives of the FSO and policy decisions on decarbonisation. Furthermore, this relationship would increase accountability and ensure all aspects of the energy system are considered on an equivalent basis.

Whilst we recognise there are benefits of the private sector model in raising capital, those investors are likely to look for growth opportunities in regulated and unregulated business streams. This may create a preference for specific outcomes and create growth opportunities for the FSO that might not have been the preference of a publicly accountable body.

If the private sector model is selected, then it is important the scope of the FSO is closely defined along with the relationships investors can have with other energy market participants.

15. Are we considering the right elements for the FSO's regulatory and accountability frameworks? And why?

We broadly agree the consultation document identifies the main areas of the regulatory and accountability framework. It is important the FSO has a duty to reliability of supply and this should cover both gas and electricity (rather than electricity in isolation) and to an efficient whole system approach, which strikes a balance between the short-term and long-term interests of consumers in its decision making.

We recognise this would require a different approach to regulation, as the role of the FSO is more likely to be determined by political accountability and reputational harm should the objectives not be met, rather than regulatory fines and penalties.

Finally, information gathering powers are more appropriate for a public sector body rather than a private sector body, where there may be a high level of concern regarding commercial confidentiality.

One area not addressed within the consultation is the process through which a decision by the FSO could be challenged and redress sought. It is important all actors have the opportunity to resolve a dispute with either the decision made by the FSO or the right of the FSO to make that decision. Having a clear mechanism to enable dispute resolution is important.

16. Do you have views on the level of shareholding or control involving other 'energy interests' and the FSO at which a conflict of interest would become a concern?

Where there is a significant shareholding interest, such as having access to board materials and the ability to influence discussions at board level, this creates a potential conflict of interest that may be of concern.

We acknowledge this creates a challenge as there is value in the effective operation of the organisation if board members have direct industry experience. However, direct experience will also bring with it interest that could easily be a point of conflicting interests, whilst these can be managed (as they are today) with appropriate separation procedures and standards of conduct, the appearance of potential conflicts can undermine the authority of the FSO regardless of how well those standards are adhered to.

17. Are we considering the right implications of our proposals for Elexon and Xoserve?

We agree the implications of the proposals for Elexon and Xoserve need to be considered in relation to the FSO function. This should take place as a part of a wider consideration of code governance and review and should not materially influence the appropriate design considerations for the FSO.

18. What is your view on the preferred implementation approach? Please explain why.

We agree with a phased implementation approach, however, it is important for a clear timeline in the legislative calendar that enables the necessary legislation to be put in place. This is an important pre-requisite to the substantive role of the FSO.

An important consideration is how the value for any assets transferred out of National Grid are appropriately compensated for. Ensuring fair and appropriate compensation is important to maintaining investor confidence in investing in the UK energy assets. Contrary, an inappropriate compensation methodology could significantly damage investor confidence at a critical time in the progress towards net zero.

19. Based on the areas where we are considering new and enhanced roles and functions for the FSO, which of these should be prioritised for development? Please explain why.

Without an established timeline for implementation of the FSO it is too early to prioritise which enhanced roles should be prioritised. It is likely today's priorities will have changed by the time the legislative processes have been enacted to enable the changes to take place.

As the programme develops, as the role of the FSO becomes more clearly established and the role of different decarbonisation pathways becomes more established, it is necessary to keep the prioritisation under constant review and consideration.

20. What do you believe are the risks to implementation? How can these be mitigated?

A significant risk to implementation is the availability of sufficiently trained staff with appropriate experience. It is important to note there is a limited pool of resource to call upon and training requirements are substantial. Training staff in a timely manner is therefore critical.

A second risk is the legislative timetable, it is important we are realistic about the legislative timeline and plan the programme accordingly so there is a clear understanding of the roles and responsibilities prior to legislation being put in place. A well-defined and thoroughly considered legislative underpinning is in our view very important to underpinning the FSO, the roles and the responsibilities.

Engagement from outset. The decarbonisation pathway determined will impact everyone in a fundamental way. It is very important there is appropriate representation of those stakeholders from the outset and we avoid the risk of an electricity focused FSO.

21. Do you have any comments on potential implications of implementation for you, your organisation, or other stakeholders?

It is important to note there will be an element of overlap and duplication between the functions of the networks and the functions of the FSO. These can be reduced over time with improved communication and flows of information, but it should be recognised these will exist for a substantial period.

22. What is your view on the position there are likely to be cost savings across the energy system from an increased “whole system” view, as described in paragraphs 47-52 of the IA? If so, is the potential magnitude of savings illustrated fairly in the IA? If not, why not?

We recognise the challenges in any assessment of benefits, and with greater emphasis on the savings associated with improved whole systems decision making rather than reduced potential conflicts of interests (which we considered perceptual rather than of monetary value).

For whole systems benefits we are concerned the assessment of cost, and therefore associated benefits, may not be complete and may be an underestimate. Whilst we do not have access to those estimates we would like to confirm they include the cost of domestic heat conversion associated with both electrification and hydrogen deployment.

23. What is your view on the conclusion that policy intervention is likely to increase the benefits of onshore electricity network competition, as described in paragraphs 53-59 of the IA? If you agree, is the potential magnitude of savings illustrated fairly in the IA? If not, why not?

We do not believe this is the case. It is our view the competition and the FSO should be completely separated as we do not think the FSO should have the capability to determining such competitive events effectively or have the necessary project delivery experience to take an informed view on the complex allocation of contractual risks between parties and allocation of risk between customers and delivery agents. Accordingly, we do not think value should be attributed to this in the impact assessment.

24. Do you think that the impact assessment has identified and considered the key costs and benefits of policy intervention? If not, can you provide details on other impacts that have not been considered?

We believe the cost should be explicit in that there will be a level of duplication required between the planning functions of networks and the future system operator, and if this leads to more informed and robust decision making then this should be considered a positive aspect as whole system benefits are likely to be greater as a result.

We would also like to confirm whether the benefits includes the full cost of alternative decarbonisation pathways such as the cost of changing domestic properties and appliances and the cost of decommissioning assets no longer required.

25. Do you think that the distribution of impacts is fairly represented, with impacted groups correctly identified? Outlined in table 5 of the IA.

No specific observations.

26. We invite respondents' views on whether the proposals for energy system governance reform may have a different impact on people who have a protected characteristic (age, disability, gender re-assignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex or sexual orientation), in different ways from people who don't have that characteristic. Please provide any evidence that may be useful to assist with our analysis of policy impacts.

No specific observations.